

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ BLACK BORDERS
- ☐ IMAGE CUT OFF AT TOP, BOTTOM OR SIDES
- ☐ FADED TEXT OR DRAWING
- ☐ BLURRED OR ILLEGIBLE TEXT OR DRAWING
- ☐ SKEWED/SLANTED IMAGES
- ☐ COLOR OR BLACK AND WHITE PHOTOGRAPHS
- ☐ GRAY SCALE DOCUMENTS
- ☐ LINES OR MARKS ON ORIGINAL DOCUMENT
- ☐ REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY
- ☐ OTHER: _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.

Appl. No. 09/628,122
Amdt. Dated August 5, 2004
Reply to Office Action of April 19, 2004

Amendments to the Claims:

This listing of Claims will replace all prior versions, and listings, of Claims in the application.

Listing of Claims:

1. (Previously Presented) A display comprising substantially a plurality of three-color pixel elements that form at least one row of said pixel elements, said three-color pixel element comprising:

a blue emitter disposed at an origin of a rectangular coordinate system having four quadrants;

a pair of red emitters spaced apart from said blue emitter and symmetrically disposed about said origin in a first pair of opposing quadrants of said rectangular coordinate system;

a pair of green emitters spaced apart from said blue emitter and symmetrically disposed about said origin in a second pair of opposing quadrants of said rectangular coordinate system; and

wherein each said emitter is connected to a driver and at least two neighboring blue emitters in a row are connected to the same driver.

2. (Previously Presented) The display of claim 1 wherein:

said blue emitter is polygonal having corners aligned at x and y axes of said rectangular coordinate system;

Appl. No. 09/628,122
Amdt. Dated August 5, 2004
Reply to Office Action of April 19, 2004

said red emitters are polygonal, each having an inwardly-facing edge parallel to a side of said polygonal blue emitter; and

said green emitters are polygonal, each having an inwardly-facing edge to a side of said polygonal blue emitter.

3. (Previously Presented) The display of claim 2 wherein:

said blue emitter is four-sided having equal internal angles, having corners aligned at x and y axes of said rectangular coordinate system;

said red emitters are four-sided having equal internal angles, each having a truncated inwardly-facing corner forming an edge parallel to a side of said four-sided blue emitter; and

said green emitters are four-sided having equal internal angles, each having a truncated inwardly-facing corner forming an edge parallel to a side of said four-sided blue emitter.

4. (Previously Presented) The display of claim 3 wherein:

said blue emitter is square having corners aligned at x and y axes of said rectangular coordinate system;

said red emitters are square, each having a truncated inwardly-facing corner forming an edge parallel to a side of said square blue emitter; and

said green emitters are square, each having a truncated inwardly-facing corner forming an edge parallel to a side of said square blue emitter.

5. (Previously Presented) The display of claim 1 wherein:

said blue emitter is square-shaped having sides aligned parallel to x and y axes of said rectangular coordinate system; and

Appl. No. 09/628,122
Amdt. Dated August 5, 2004
Reply to Office Action of April 19, 2004

said red emitters and said green emitters are L-shaped and envelop said square blue emitter.

6. (Amended) A three-color pixel element for a display comprising:

a pair of red emitters symmetrically disposed about an origin of a rectangular coordinate system having four quadrants in a first pair of opposing quadrants;

a pair of green emitters symmetrically disposed about said origin of said rectangular coordinate system in a second pair of opposing quadrants; and

a blue emitter disposed at said origin of said rectangular coordinate system, said blue emitter having an emitting area larger than that of each of said red emitters and said green emitters.

7. (Original) The three-color pixel element of claim 6 wherein:

said blue emitter is polygonal having corners aligned at x and y axes of said rectangular coordinate system;

said red emitters are polygonal, each having an inwardly-facing edge parallel to a side of said polygonal blue emitter; and

said green emitters are polygonal, each having an inwardly-facing edge parallel to a side of said polygonal blue emitter.

8. (Original) The three-color pixel element of claim 7 wherein:

said blue emitter is four-sided having equal internal angles, each having corners aligned at x and y axes of said rectangular coordinate system;

said red emitters are four-sided having equal internal angles, each having a truncated inwardly-facing corner forming an edge parallel to a side of said four-sided blue emitter; and

Appl. No. 09/628,122
Amdt. Dated August 5, 2004
Reply to Office Action of April 19, 2004

said green emitters are four-sided having equal internal angles, each having a truncated inwardly-facing corner forming an edge parallel to a side of said four-sided blue emitter.

9. (Original) The three-color pixel element of claim 8 wherein:

said blue emitter is square having corners aligned at x and y axes of said rectangular coordinate system;

said red emitters are square, each having a truncated inwardly-facing corner forming an edge parallel to a side of said square blue emitter; and

said green emitters are square, each having a truncated inwardly-facing corner forming an edge parallel to a side of said square blue emitter.

10. (Original) The three-color pixel element of claim 6 wherein:

said blue emitter is square-shaped having sides aligned parallel to x and y axes of said rectangular coordinate system; and

said red emitters and said green emitters are L-shaped and envelop said square blue emitter.

11. (Amended) A three-color pixel element for a display comprising:

a pair of red emitters symmetrically disposed about an origin of a rectangular coordinate system having four quadrants in a first pair of opposing quadrants;

a pair of green emitters symmetrically disposed about said origin of said rectangular coordinate system in a second pair of opposing; and

a blue emitter disposed at said origin of said rectangular coordinate system, said blue emitter having a larger drive-to-luminance gain than that of each of said red emitters and green emitters.

12. (Original) The three-color pixel element of claim 11 wherein:

Appl. No. 09/628,122
Amdt. Dated August 5, 2004
Reply to Office Action of April 19, 2004

said blue emitter is polygonal having corners aligned at x and y axes of said rectangular coordinate system;

said red emitters are polygonal, each having an inwardly-facing edge parallel to a side of said polygonal blue emitter; and

said green emitters are polygonal, each having an inwardly-facing edge parallel to a side of said polygonal blue emitter.

13. (Original) The three-color pixel element of claim 12 wherein:

said blue emitter is four-sided having equal internal angles, having corners aligned at x and y axes of said rectangular coordinate system;

said red emitters are four-sided having equal internal angles, each having a truncated inwardly-facing corner forming an edge parallel to a side of said four-sided blue emitter; and

said green emitters are four-sided having equal internal angles, each having a truncated inwardly-facing corner forming an edge parallel to a side of said four-sided blue emitter.

14. (Original) The three-color pixel element of claim 13 wherein:

said blue emitter is square having corners aligned at x and y axes of said rectangular coordinate system;

said red emitters are square, each having a truncated inwardly-facing corner forming an edge parallel to a side of said square blue emitter; and

said green emitters are square, each having a truncated inwardly-facing corner forming an edge parallel to a side of said square blue emitter.

15. (Original) The three-color pixel element of claim 11 wherein:

Appl. No. 09/628,122
Amdt. Dated August 5, 2004
Reply to Office Action of April 19, 2004

said blue emitter is square-shaped having sides aligned parallel to x and y axes of said rectangular coordinate system; and

said red emitters and said green emitters are L-shaped and envelop said square blue emitter.

16 (Previously Presented) A display comprising substantially a plurality of three-color pixel elements that form at least one row of pixel elements, said three-color pixel element comprising:

a pair of red emitters, outer corners of each forming a first two opposing corners of a square;

a pair of green emitters, outer corners of each forming a second two opposing corners of said square;

a blue emitter disposed at a center of said square; and

wherein each said emitter is connected to a driver and at least two neighboring blue emitters in a same row are connected to the same driver.

17. (Previously Presented) The display of claim 16 wherein:

said blue emitter disposed at said center of said square and is polygonal having sides aligned such that imaginary lines perpendicularly bisecting each side pass through corners of said polygon;

said red emitters are polygonal, each having an inwardly-facing edge parallel to an edge of said polygonal blue emitter; and

said green emitters are polygonal, each having an inwardly-facing edge parallel an edge of said polygonal blue emitter.

18. (Previously Presented) The display of claim 17 wherein:

Appl. No. 09/628,122
Amdt. Dated August 5, 2004
Reply to Office Action of April 19, 2004.

said blue emitter disposed at said center of said square and is four-sided having equal internal angles, having sides aligned such that imaginary lines perpendicularly bisecting each side pass through said corners of said square;

said red emitters are four-sided having equal internal angles, each having a truncated inwardly-facing corner forming a line parallel to an edge of said four-sided blue emitter; and

said green emitters are four sided having equal internal angles, each having a truncated inwardly-facing corner forming a line parallel to an edge of said four-sided blue emitter.

19. (Previously Presented) The display of claim 18 wherein:

said blue emitter disposed at said center of said square and is square-shaped having sides aligned such that imaginary lines perpendicularly bisecting each side pass through said corners of said square;

said red emitters are square-shaped, each having a truncated inwardly-facing corner forming a line parallel to an edge of said four-sided blue emitter; and

said green emitters are square-shaped, each having a truncated inwardly-facing corner forming an edge parallel to a side of said four-sided blue emitter.

20. (Previously Presented) The display of claim 16 wherein:

said blue emitter disposed at said center of said square and is square-shaped having sides parallel to sides of said square;

said red emitters and green emitters are L-shaped and envelop said square-shaped blue emitter.

Appl. No. 09/628,122
Amdt. Dated August 5, 2004
Reply to Office Action of April 19, 2004

21. (Original) A three-color pixel element in a shape of a square for a display comprising:

a pair of red emitters, outer corners of each forming a first two opposing corners of a square;

a pair of green emitters, outer corners of each forming a second two opposing corners of said square; and

a blue emitter disposed at a center of said square, wherein said blue emitter having an emitting area larger than that of each of said red emitters and said green emitters.

22. (Previously Presented) The three-color pixel element of claim 21 wherein:

said blue emitter disposed at said center of said square and is polygonal having sides aligned such that imaginary lines perpendicularly bisecting each side pass through corners of said polygon;

said red emitters are polygonal, each having an inwardly-facing edge parallel to an edge of said polygonal blue emitter; and

said green emitters are polygonal, each having an inwardly-facing edge parallel an edge of said polygonal blue emitter.

23. (Previously Presented) The three-color pixel element of claim 22 wherein:

said blue emitter disposed at said center of said square and is four-sided having equal internal angles, having sides aligned such that imaginary lines perpendicularly bisecting each side pass through said corners of said square;

Appl. No. 09/628,122
Amdt. Dated August 5, 2004
Reply to Office Action of April 19, 2004

said red emitters are four-sided having equal internal angles, each having a truncated inwardly-facing corner forming a line parallel to an edge of said four-sided blue emitter; and

said green emitters are four-sided having equal internal angles, each having a truncated inwardly-facing corner forming an edge parallel to a side of said four-sided blue emitter.

24. (Previously Presented) The three-color pixel element of claim 23 wherein:

said blue emitter disposed at said center of said square and is square-shaped having sides aligned such that imaginary lines perpendicularly bisecting each side pass through said corners of said square;

said red emitters are square-shaped, each having a truncated inwardly-facing corner forming a line parallel to an edge of said square-shaped blue emitter; and

said green emitters are square-shaped, each having a truncated inwardly facing corner forming an edge parallel to a side of said square-shaped blue emitter.

25. (Previously Presented) The three-color pixel element of claim 21 wherein:

said blue emitter disposed at said center of said square and is square-shaped having sides parallel to sides of said square; and

said red emitters and said green emitters are L-shaped and envelop said square-shaped blue emitter.

26. (Previously Presented) A three-color pixel element in a shape of a square for a display comprising:

a pair of red emitters, outer corner of each forming a first two opposing corners of a square;

Appl. No. 09/628,122
Amdt. Dated August 5, 2004
Reply to Office Action of April 19, 2004

a pair of green emitters, outer corners of each forming a second two opposing corners of said square; and

a blue emitter disposed at a center of said square, wherein said blue emitter having a larger drive-to luminance gain than that of each of said red emitters and said green emitters.

27. (Previously Presented) The three-color pixel element of claim 26 wherein:

said blue emitter disposed at said center of said square and is polygonal having sides aligned such that imaginary lines perpendicularly bisecting each side pass through corners of said polygon;

said red emitters are polygonal, each having an inwardly-facing edge parallel to an edge of said polygonal blue emitter; and

said green emitters are polygonal, each having an inwardly-facing edge parallel an edge of said polygonal blue emitter.

28. (Previously Presented) The three-color pixel element of claim 27 wherein:

said blue emitter disposed at said center of said square and is four-sided having equal internal angles, having sides aligned such that imaginary lines perpendicularly bisecting each side pass through said corners of said square;

said red emitters are four-sided having equal internal angles, each having a truncated inwardly-facing corner forming a line parallel to an edge of said four-sided blue emitter; and

said green emitters are four-sided having equal internal angles, each having a truncated inwardly-facing corner forming an edge parallel to a side of said four-sided blue emitter.

Appl. No. 09/628,122
Amdt. Dated August 5, 2004
Reply to Office Action of April 19, 2004

29. (Previously Presented) The three-color pixel element of claim 28 wherein:

said blue emitter disposed at said center of said square and is square-shaped having sides aligned such that imaginary lines perpendicularly bisecting each side pass through said corners of said square;

said red emitters are square-shaped, each having a truncated inwardly-facing corner forming a line parallel to an edge of said square-shaped blue emitter; and

said green emitters are square-shaped, each having a truncated inwardly-facing corner forming an edge parallel to a side of said square-shaped blue emitter.

30. (Previously Presented) The three-color pixel element of claim 26 wherein:

said blue emitter disposed at said center of said square and is square-shaped having sides parallel to a side of said square; and

said red emitters and said green emitters are L-shaped and envelop said square-shaped blue emitter.

31. (Previously Presented) An array for a display comprising:

a plurality of row positions;

a plurality of column positions; and

a plurality of three-color pixel elements, one of said elements disposed in each of said row positions and said column positions, each of said three-color pixel elements comprising:

a blue emitter disposed at an origin of a rectangular coordinate system having four quadrants;

Appl. No. 09/628,122
Amdt. Dated August 5, 2004
Reply to Office Action of April 19, 2004

a pair of red emitters spaced apart from said blue emitter and symmetrically disposed about said origin in a first pair of opposing quadrants of said rectangular coordinate system;

a pair of green emitters spaced apart from said blue emitter and symmetrically disposed about said origin in a second pair of opposing quadrants of said rectangular coordinate system; and

wherein each said emitter is connected to a driver and at least two neighboring blue emitters in a same row are connected to the same driver.

32. (Presently Presented) The array of claim 31 wherein the spatial frequency of each said three-color pixel element in a row direction is greater than in the column direction.

33. (Previously Presented) The array of claim 31 wherein the spatial frequency of each said three-color pixel element in a column direction is greater than in the row direction.

34. (Previously Presented) An array for a display comprising:

a plurality of row positions;

a plurality of column positions; and

a plurality of three-color pixel elements, one of said elements disposed in each of said row positions and said column positions, each of said three-color pixel elements comprising:

a blue emitter disposed at a center of said square;

a pair of red emitters spaced apart from said blue emitter, outer corners of each forming a first two opposing corners of a square

Appl. No. 09/628,122
Amdt. Dated August 5, 2004
Reply to Office Action of April 19, 2004

a pair of green emitters spaced apart from said blue emitter, outer corners of each forming a second two opposing corners of said square; and

wherein each said emitter is connected to a driver and at least two neighboring blue emitters in a same row are connected to the same driver.

35. (Previously Presented) The array of claim 34 wherein the spatial frequency of each said three-color pixel element in a row direction is greater than in the column direction.

36. (Previously Presented) The array of claim 34 wherein the spatial frequency of each said three-color pixel element in a column direction is greater than in the row direction.

37. (Previously Presented) In an array of three-color pixel elements, a row structure comprising:

first and second three-color pixel elements, each three-color pixel element including first and second red emitters, first and second green emitters, and a blue emitter;

first and second row line drivers;

a first row line coupled to said first row line driver, said first row line coupled to said blue emitter of said second three-color pixel element, and said first red emitter and said first green emitter of said first and said second three-color pixel element;

a second row line coupled to said second row line driver, said second row line coupled to said blue emitter of said first three-color pixel element, and said second red emitter and said second green emitter of said first and said second three-color pixel element;

Appl. No. 09/628,122
Amdt. Dated August 5, 2004
Reply to Office Action of April 19, 2004

first through fifth column line drivers;

a first column line coupled to said first column line driver, said first column line coupled to said first red emitter and said second green emitter of said first three-color pixel element;

a second column line coupled to said second column line driver, said second column line coupled to said blue emitter of said first and said second three-color pixel element;

a third column line coupled to said third column line driver, said third column line coupled to said second red emitter and said first green emitter of said first three-color pixel element;

a fourth column line coupled to said fourth column line driver, said fourth column line coupled to said first red emitter and said second green emitter of said second three-color pixel element; and

a fifth column line coupled to said fifth column line driver, said fifth column line coupled to said second red emitter and said first green emitter of said second three-color pixel element.

38. (Previously Presented) An array comprising:

a plurality of rows, each row comprising:

first and second three-color pixel elements, each three-color pixel element including first and second red emitters, first and second green emitters, and a blue emitter;

first and second row line drivers;

a first row line coupled to said first row line driver, said first row line coupled to

Appl. No. 09/628,122
Amdt. Dated August 5, 2004
Reply to Office Action of April 19, 2004

said blue emitter of said second three-color pixel element, and said first red emitter and said first green emitter of said first and said second three-color pixel element;

a second row line coupled to said second row line driver, said second row line coupled to said blue emitter of said first three-color pixel element, and said second red emitter and said second green emitter of said first and said second three-color pixel element;

first through fifth column line drivers;

a first column line coupled to said first column line driver, said first column line spanning said plurality of rows, said first column line coupled to said first red emitter and said second green emitter of each said first three-color pixel element in each row;

a second column line coupled to said second column line driver, said second column line spanning said plurality of rows, said second column line coupled to each said blue emitter of said first and second three-color pixel element in each row;

a third column line coupled to said third column line driver, said third column line spanning said plurality of rows, said third column line coupled to said second red emitter and said first green emitter of each said first three color pixel element in each row;

a fourth column line coupled to said fourth column line driver, said fourth column line spanning said plurality of rows, said fourth column line coupled to said first red emitter and said second green emitter of each said second three-color pixel element in each row; and

a fifth column line coupled to said fifth column line driver, said fifth column line spanning said plurality of rows, said fifth column line coupled to said second red emitter and said first green emitter of each said second three-color pixel element in each row.

Appl. No. 09/628,122
Amdt. Dated August 5, 2004
Reply to Office Action of April 19, 2004

39. (Previously Presented) An image capture device comprising a plurality of three-color pixel elements that form at least one row of pixel elements; each three-color pixel element comprising:

a blue emitter disposed at an origin of a rectangular coordinate system having four quadrants;

a pair of red emitters spaced apart from said blue emitter and symmetrically disposed about said origin in a first pair of opposing quadrants of said rectangular coordinate system;

a pair of green emitters spaced apart from said blue emitter and symmetrically disposed about said origin in a second pair of opposing quadrants of said rectangular coordinate system; and

wherein each said emitter is connected to a driver and at least two neighboring blue emitters in a same row are connected to the same driver.

40. (Previously Presented) An image capture device substantially comprising a plurality of three-color pixel elements, each three-color pixel element comprising:

a blue emitter;

a pair of red emitters; and

a pair of green emitters such that said red emitters and said green emitters form substantially a checkerboard pattern upon said image capture device.

41. (Previously Presented) The image capture device of claim 40 wherein each three-color pixel element further comprises the pattern:

Appl. No. 09/628,122
Amdt. Dated August 5, 2004
Reply to Office Action of April 19, 2004

R G

B

G R.

42. (Previously Presented) A display substantially comprising a plurality of three-color pixel elements that form at least one row of pixel elements, each three-color pixel element comprising:

a blue emitter;

a pair of red emitters;

a pair of green emitters such that said red emitters and said green emitters form substantially a checkerboard pattern upon said display; and

wherein at least two neighboring blue emitters in a same row of at least two three-color pixel elements are connected to a same driver.

43. (Previously Presented) The display of claim 42 wherein each three-color pixel element further comprises the pattern:

R G

B

G R.

44. (Previously Presented) The display of claim 42 wherein said display is one of a group comprising a liquid crystal display, an organic light emitting diode display, an electro luminescent display, a plasma display, and a field emission display.

Appl. No. 09/628,122
Amdt. Dated August 5, 2004
Reply to Office Action of April 19, 2004

45. (Previously Presented) The display of claim 42 wherein said at least two neighboring blue emitters are connected to the same column driver.
46. (Previously Presented) The display of claim 42 wherein said at least two neighboring blue emitters are connected to the same row driver.
47. (Previously Presented) An image storage device substantially comprising a plurality of storage locations associated with three-color pixel elements, each three-color pixel element comprising: a blue emitter; a pair of red emitters; and a pair of green emitters such that said red emitters and said green emitters form substantially a checkerboard pattern upon said image capture device.
48. (Currently Amended) A flat panel display comprising substantially a plurality of three-color pixel elements, each of said three-color pixel element comprising:
- a blue emitter;
 - a pair of red emitters;
 - a pair of green emitters such that said red and said green emitters substantially form a checkerboard pattern; and
- wherein further each said emitter is independently addressable.
49. (Currently Amended) The flat panel display of claim 48 wherein each emitter is capable of being driven with a variable analog signal.
50. (New) The flat panel display of Claim 48 wherein said display is one of a group comprising a liquid crystal display, an organic light emitting diode display, an electro luminescent display, a plasma display, and a field emission display.

Appl. No. 09/628,122
Amdt. Dated August 5, 2004
Reply to Office Action of April 19, 2004

51. (New) A display substantially comprising a plurality of three-color pixel elements formed along a first direction of pixel elements, each three-color pixel element comprising:

a blue emitter;

a pair of red emitters;

a pair of green emitters such that said red emitters and said green emitters form substantially a checkerboard pattern upon said display; and

wherein at least two blue emitters in a same first direction of at least two three-color pixel elements are connected to a same data driver.

52. (New) The display of claim 51 wherein each three-color pixel element further comprises one of a group of patterns, said group comprising:

G	R		R	G
	B	And	B	
R	G		G	R.

53. (New) The display of claim 51 wherein said display is one of a group comprising a liquid crystal display, an organic light emitting diode display, an electro luminescent display, a plasma display, and a field emission display.

54. (New) The display of claim 51 wherein said first direction is a column direction.

55. (New) The display of claim 51 wherein said first direction is a row direction.